A report on the seminars held in
Huntly, New Zealand,
Ordos, Inner Mongolia
for the Yitai Group in co-operation with
State Administration for Work and Safety-
Beijing, New Zealand Council of Trade Unions,
Solid Energy and
Mines Rescue
April – June 2007

Report prepared by Hazel Armstrong, NZCTU
and Dave Feickert, mining consultant.
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Introduction

The NZCTU is proud to have led this project in co-operation with the EPMU, the Department of Labour, Solid Energy Limited and the Chinese State Adminstration of Work Safety (SAWS).

The NZCTU has developed a close relationship with the All China Federation of Trade Unions over the past decade. While the ACFTU is very large with more than 120 million affiliated union members, and the NZCTU is comparatively small with less than 400,000 affiliated union members we have had a frank and productive exchange of views on a broad range of issues relating to conditions of work and the role of unions in a market economy.

One of our objectives has been to offer what advice and assistance we can. The scale of the challenge in a China experiencing rapid industrialisation, and the largest rural-urban migration in the history of the world, is daunting.

This project was undertaken in that context, with the objective of both building relationships at all levels with a major country in our neighbourhood, and making a contribution, however small, to the development of effective injury prevention and health protection systems in the Chinese coal industry.

Dave Feickert, a New Zealander with many years of experience in the UK coal industry first raised the idea of this project and has managed it. I would also like to acknowledge the interest by the Minister of Labour Ruth Dyson, the financial support from the Department of Labour, and the partnership with Solid Energy Limited in developing and delivering the project.

Ross Wilson
President
NZ Council of Trade Unions
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White board exercise at the seminar with the Yitai Group

The participants at the seminar with the Yitai Group
The Report of the seminar presentations

This report contains:

• An outline of course content;
• The course evaluation by the seminar participants;
• Appendices which contain the actual power point presentations;
• The resource book put together by the presenters and SAWS which is in Chinese. This booklet was given to each seminar participant at the Yitai Group;
• Recommendations arising from the evaluations and discussions with SAWS and the ILO representative in Beijing.

Acknowledgments

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Datong Group in Shanxi Province, Fengfeng and Kailuan Group in Hebei Province
Yitai Group in Inner Mongolia.
Mr Zhai, Vice President, Yitai Group
Peter Conway, Economist, NZCTU
Kim Gouk, Engineering Printing and Manufacturing Union (EPMU)
Paul Tolich, EPMU
Department of Labour, NZ
ACC, NZ
Solid Energy, State owned enterprise, NZ – Mark Pizey
Thompson’s Solicitors, UK

Tutors

Dave Feickert, mining safety consultant
Hazel Armstrong, professional training advisor in health and safety to NZCTU
Dave Stewart, consultant to Solid Energy (Huntly Seminar only)
Doug Burt, training manager Solid Energy (Huntly Seminar only)
Norm Jennings, ILO , former Deputy Director sectoral activities (Huntly seminar only)
Stan Alder, manager, Mines Rescue, Huntly (Huntly seminar only)
David Creedy (Yitai Group seminar only)
NZ - The Huntly Seminar

The first of two seminars was held in Huntly between 13th April and 26th April 2007. It was attended by mine managers and safety personnel from the Datong Group, Fengfeng Group and Kailuan Group.\(^1\)

The purpose of the training was to give the Chinese delegation information about how safety and workers compensation is managed in New Zealand. The delivery of the training – the techniques, style and emphasis incorporated the NZ way: interactive training, based on practical examples, highlighting the role of the health and safety representative.

In the first week of training, a case study was used to develop the concepts of safety; the participants reflected on their leaning in groups and reported back. Sessions were also held on the health and safety representative system and workers compensation (ACC). They attended Mines Rescue. In the second week, the participants covered the ILO COP, considered international safety models and were able to meet our Minister of Labour and ACC, Hon Ruth Dyson.

Programme

Case Study from CoalCorp West Mine Explosion
Identification of hazards that caused the explosion
Hazard Management
The hierarchy of controls
New Zealand’s legal framework for health and safety
The legal framework in China for mine safety
What lessons can be learnt from this case study for China
The role of the health and safety representative
Inspections and health and safety representation
Investigation of accidents
Risk identification and risk assessment
Spontaneous combustion
How do we deal with risk?
Training and supervision
Training programmes for miners, supervisors and health and safety representatives
Emergency Preparedness
Injury Reporting, rehabilitation and return to work
Assistance given to injured workers
Workplace planning

Evaluation

China Mine Safety Co-operation Seminar
16th – 20th April 2007
Hillside Hotel
Huntley

At the conclusion of the week long programme undertaken by tutors Dave Stewart, Hazel Armstrong and Doug Burt, course evaluation forms were provided to Task Groups 1 and 2. These were completed and returned to the interpreters and translated.

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\(^1\) Datong Group (100 mtpy, 200,000 employees); Fengfeng Group has 12 mines, is also in power and chemicals; Kailuan Group has 8 large mines, 25 mtpy.
**What were the objectives of the course?**

In this part of the booklet, we reproduce the comments from the Chinese participants without editing.

Task Group 1

Understanding of the health and safety system in NZ, compared to the situation in China. Thinking about how to improve and learn from the system in NZ in order to improve health and safety in China and the level of safety management.

Task Group 2

The group reported that they now know something about the health and safety system, health and safety reps, committees and hazard management etc. Also the emergency rescue system in coal mines, underground management in NZ. Also the training delivered by NZCTU to the reps. Comparing the NZ system and China. Learn the advanced management experiences from NZ’s system and then try to improve the development of health and safety in coal mining in China.

**Were those objectives met?**

Task Group 1

We were moved greatly through the case study especially around the health and safety system, the method to use to guarantee the system, also emergency preparedness and the attitude to employees. These three aspects greatly impressed us.

Task Group 2

Yes, the objectives were met. Especially worth learning the health and safety system in NZ and emergency preparedness and the positive attitude towards work.

**Any comments on the venue, catering or facilities?**

Task Group 1

Tidy, first class service but taste of dishes is different from the typical Chinese style. It could be improved.

Task Group 2

Clean, friendly, good facilities, improvements could be made because of different habits for taste.

**Please identify the positive features of the course?**

Task Group 1

1. Especially the health and safety system and the health and safety representative system.
2. The management system and also employee participation.
3. Legislation which guarantees the system – the foundation of the system.
4. The NZ trade unions – their training programme for their reps.

Task Group 2
Establishment and practice of the health and safety system. Health and safety reps and health and safety committees which play/fulfill their role. Emergency preparedness in coal mining. The role the trade unions had played in training the reps and the workers compensation.

**Were there aspects of the course that could have been done better?**

Task Group 1

1. To use the Chinese language as much as you can in order to reduce the burden on the interpreters and so we can improve the understanding of the learners.

2. The content and key points of the training needs to be more targeted as this course has 10 delegates with different levels of understanding and different requirements. Target the course at a particular audience as managers and foremen are at different levels.

Task Group 2

Prefer to have more in Chinese and more detailed, as could not understand the terms. Content of training – would want to know more about equipment and monitoring system.

**What difference will the course make to you?**

Task Group 1

Try to improve training in China. Make it more targeted and try to change the negative aspects of the training e.g. forced to pass health and safety exams in China. Try to make progress for the accidents – move to the level of prevention from rescue. Emphasise prevention.

Task Group 2

Learn and apply way of management in their future work. Improve health and safety system underground, also emergency preparedness, also training for miners and advanced management system and methods used to manage those kinds of things.

**General Comments**

Task Group 1

We found that the health and safety system and emergency preparedness and active attitude of employees are at a high/advanced level. Attitude of Government, different level of managers and employees – their attitude to health and safety. NZ is a very developed country in the world, it is people orientated.

Task Group 2

It is really necessary to learn. It is helpful for improvement of the safety management in China, so we reduce the accident rate.

China Mine Safety Co-operation Seminar
16th – 20th April 2007
Hillside Hotel
Huntly
**Week Two**

Report from the Chinese delegation:

1. Presentation by Norman Jennings: Understanding of the Code of Practice stipulated by ILO as a technical practice guideline, which is practical and of great value as a reference for improving underground coal mine safety situation in China.

2. The statistical analysis of coal industry accidents in UK through its development phase is very good and helpful for analysing the cause of accidents of coal industry in China – presentation by Dave Feickert of the study of causes of mine explosions 1860-1970, carried out by Peter McNestry, former General Secretary of the pit deputies union, NACODS, to the US Congressional-Executive Commission on China in 2004.

3. Presentation by Dave Feickert: the triangle model of safety management system objectively introduces to us about the relationship featured in mutual co-operation, reliance and partnership among government Inspectors, workers inspectors and employers/managers. This model can also be valued as a good reference for optimising China’s safety management regime.

4. The visit to Huntly Mine Rescue Services gives us more idea about the mines rescue system in NZ. The simulative training of voluntary team members impressed us, along with the advanced mine rescue equipments, sound training regime and effects, which are worth our learning.

**China – Ordos – the Yitai Group Seminar**

The seminar was held in Inner Mongolia at the headquarters of the Yitai Group. The Yitai Group is a holding company which produces coal, oil from coal, solar power, pharmaceuticals and is involved in real estate. It runs its own railways to the coast. It is involved in technological research about coal and mining, in partnership with a research institute. It has funded a hospital service.

Its head office is in Ordos, Inner Mongolia, which is in the vicinity of their 22 mines. It has 3,000 employees. It was established 19 years ago.

It is one of the top 50 companies in Inner Mongolia and one of the most profitable in China. By 2010 their target is to produce 50m tonnes of coal a year up from 12 m tonnes. The Yitai Group is still developing its mines.

The coal is at a shallow depth, between 50-200 metres deep, there is plenty of it, and it’s of good quality. The coal is taken to Shanghai to the port for use by power stations in the Shanghai region.

The Yitai Group’s founder persuaded the Government to move away from the State Owned Enterprise structure, to an employee owned company. New shares have been taken up by the management, and some B shares have been launched on the international stock market.

Yitai is a model mining group with a low accident rate, of 0.036 per million tonnes, which compares with the US accident rate in mining. The mine at Yitai has a “safety concept”. The current Vice President, Mr Zhai is a former professor from Quindao University who welcomes learning from overseas experts, and he works closely with SAWS.
The Yitai Group was selected by SAWS, the State Administration for Work Safety, as the location for the seminar. SAWS aims to give more emphasis to safety to ensure coal mining is sustainable.

The seminar participants were from Yitai’s safety department, their inspectorate, management, safety engineers, control room operators and representatives from the local branch of SAWS. SAWS provided two interpreters, who assisted by translating materials prior to the seminar and at the seminar.

Mr Zhai the Vice President of the Yitai Group and Ms Hu from the International Co-operation Centre of SAWS, opened the conference.

**Day 1: The outline of course content**

On the first day there were 50 participants dropping to about 30 on the last day.

The content of the first day included:

- Presentation by Dave Feickert – an international review of mine safety
- Presentation and group work by Hazel Armstrong – New Zealand’s Health and Safety System and the role of the health and safety representative
- Presentation by Dave Feickert on the roles in the safety triangle, in particular the role of the worker inspector

**Evaluation of Yitai Group Seminar Day 1**

8 evaluation forms were handed out and completed by the participants in groups, and returned. The forms were translated into Chinese, the answers were written in Chinese and translated back into English.

**Workshop Content**
- The exercises were useful yes x 8
- The handouts were helpful yes x 7
- I understood the content yes x 8

**Workshop Facilitation**
- I felt comfortable and welcomed yes x 7
- The workshop was set at the right pace for me yes x 8
- There was a good balance between listening and discussion yes x 8
- Everyone had the opportunity to speak yes x 7
- I was able to have my questions answered yes x 8

**Workshop outcomes**
- The outcomes of each session were explained yes x 8
- The outcomes met my expectations yes x 5
- The workshop increased my understanding of the role of the health and safety representative yes x 8
- The workshop gave me some new ideas to improve health and safety in the workplace yes x 8

**General Comments**
- The best part of the workshop for me was: foreign health and safety management system; the role of the...
worker inspector; analysis of the fatal accidents; presentations are good – thank you; health and safety knowledge; shown something about the different system between two countries

One thing that could improve the workshop is:
offer Chinese material; need more detailed and specific illustrations for specific operations of different coal mines; time is too short; want more Chinese materials; to improve work safety is very important; more case studies.

Anything else you would like to add: please offer detailed materials; introduce more foreign practices of safety management;

Programme Content

Day 2: David Creedy – Safety Culture
  Dave Feickert – Case Study on a Chinese gas burst explosion
  Hazel Armstrong – the safety concept
  Hazel Armstrong – NZ’s Accident Compensation Scheme
  Dave Feickert - Occupational Disease

Day 3: Dave Feickert- ILO COP on safety and health in underground coalmines
  Dave Feickert - Chart of UK Fatalities 1860-1970 – discussion
  Concluding discussion: the white board discussion- the Chinese system

Evaluation for Days 2 and 3

There were 23 evaluation sheets handed out which had been translated into Chinese. 13 completed page 1 and 23 participants completed page 2.

Workshop Content
The exercises were useful yes x 12 (I left blank)
The hand outs were helpful yes x 12 (1 left blank)
I understood the content yes x 12

Workshop facilitation
I felt comfortable and welcomed yes x 12
The workshop was set at the right pace for me yes x 12
There was a good balance between listening and discussion yes x 13
Everyone had an opportunity to speak yes x 13
I was able to have my questions answered yes x 13

Workshop outcomes
The outcomes of each session were explained yes x 20 (2 left blank)
The outcomes met my expectations yes x 11 (5 left blank)
The workshop increased my understanding of the role of the h and s rep yes x 19 (2 left blank)
The workshop gave me some new ideas to improve h and s in the workplace yes x 20 (2 left blank)

General Comments
The best part of the workshop for me was:
gave me a general idea of foreign methods and experience in management; international review on mine safety, the contents (of the seminar) looked at the coal industry from a global perspective which broadened my mind greatly;
safety management in NZ;
-accidents and injury reporting and investigation;
-the health and safety system in NZ, the safety management system;
-good training methodology, enlightened me as to health and safety reps;
- have a general idea of the safety situation in NZ, Australia and UK- worthwhile learning;
- health and safety reps;
-health and safety reps and the ILO COP;
- group discussion and mutual exchange;
-good lecturers with rich content, effective communication, good discussion-a good way to share understanding during the course, responsible teachers who are highly praised by students;
- ACC scheme;
- h and s reps, ACC scheme and safety culture;
-Vivid presentations;
-relevant legislation or regulations internationally, foreign mine safety management;
-ILO COP;
- clear lectures, new concepts, mutual discussion, hardworking teachers and interpreters;
-safety management, safety culture;
-H and s reps, safety triangle, ILO COP;

One thing that could improve the workshop is:
- more detailed information;
- combine the Chinese work safety situation with the course would be better;
- deeper illustration on foreign advanced systems, management and regulations;
- what are the disadvantages for the safety triangle during its implementation process, and how do you solve these problems;
- use more Chinese materials;
- it would be better if you could arrange a presentation on the specific safety management for the Yitai Group as we use the pillar recovery method;
- more detailed information would be better;
- please translate the materials in time;
- more detailed information or presentations on advanced mining technologies and safety measures abroad;
- further our co-operation and contact;
- it would be better if the interpreters were professionals from the coal industry;
- more information on safety management in the world such as the US and Russia;
- to realize the role of H and S reps in China;
- improve on PPE, understand our way of thinking;
- more targeted, interpreters should be professionals in the coal industry;
- more detailed analysis and introduction on management methods;
- it would be better if the presenters spoke Chinese;
- the safety management comparison between NZ and China, advanced experience and models of management in foreign countries;
- please combine the specific situation of Chinese coal industry with the features of our company so that you can give some specific suggestions for our company on work safety;
- improvement for the interpreters – professional knowledge on the coal industry.

Anything else you would like to add:
- Improve the courses with more detailed illustrations from the following aspects
  – establishment of the safety system, infrastructure, safety investment, training, safety mechanisms for long term effectiveness.
- We need more information on safety management, mining methods etc;
- It would be better to add more case studies;
- We need more detailed materials on the course not just the outlines;
- welcome to visit our coal mines;
- good way of communication, it would be better if we separated the senior leaders and the common employees during the training;
- more exchanges in the future;
- Strengthen our contacts and co-operation;
- Good training, hope for more opportunities for exchange;
- More detailed introduction on the safety culture within an enterprise;
- Longer time for training would be better;
- It is a better way if you could always make the comparison between China and other foreign countries;
- It would be better if you could print the materials bi-lingual, it would be helpful for us to understand some technical terms;
- Hope you could visit our company again and share with us the best practices of the world.
Recommendations for future projects

1. Work in collaboration with a Chinese specialist in mine safety and health;
2. Develop a bi-lingual glossary of terms;
3. Develop more case studies (where relevant, with SAWS, or with contacts from the region where the participants are from);
4. Utilise the ILO COP as a teaching tool;
5. Obtain a Chinese language version of the ILO COP and distribute to participants;
6. Maintain content which includes an explanation of the h and s rep system;
7. Minimum 3 days training (more if possible).
9. Arrange a delegation to NZ with China’s Ministry of Labour concerning NZ’s ACC scheme – the key issues identified are
   • the levy system (the concept of an industry levy)
   • the partnership programme and NIDMAR
   • integration of injury prevention with a compensation scheme
   • funding of health and safety representative training
   • funding of DOL through HSE Levy
   • data collection for injury prevention purposes
   • state administration of workers compensation
10. Company to company delegations and institutional collaborations may be the next step.
APPENDICIES

Appendix 1 - The role of the worker inspector

These roles are written into UK and Australian law, and formerly in NZ's law until 1992 when the HSE Act was implemented. The role of the worker inspector has been in law since 1911 in the UK.

The worker inspector must inspect the whole mine every month. The worker inspector also does his ordinary job. The inspections are agreed with management, and he is relieved by another worker while he is doing the inspections. In a large mine the inspections may take nearly all their time. He is not part of the management team. They are paid their wages, including bonuses. There is no special payment. The worker inspector is a member of the safety committee of the mine. There are worker and management representatives on the committee. In the UK if there are many mines nearby, there will be a regional committee, where they can learn from each other. If there are two worker inspectors, they can divide the mine into areas between them. The worker inspectors can be accompanied by management. They must complete a report after each inspection. The report is sent to the Govt inspector and to the manager and a copy is pinned onto the notice board at the mine. If the worker inspector has identified a hazard, the Govt inspector must take it up with management. Then there is a meeting between all parties, unless the manager can sort out the problem quickly. Then he notifies the worker inspector. This is a tripartite system. Each role reinforces the other. Each of the three can take an independent view, as they have the support of organisations behind them. The worker inspector must be able to send a strong report to management, without fear of dismissal. The Govt Inspector must be supported so he can tell the parties what the issues are. In some British mines the management sometimes asked the worker inspectors to make more frequent inspections. The worker's representative has an interest in staying alive. The workers are always underground when they are at work, whereas the managers are only sometimes underground.

The purpose of the worker inspector is to solve safety problems.

A case study was used to illustrate the role of the worker inspector.
Appendix 2 - The Health and Safety System in New Zealand


In New Zealand, the law relating to health and safety, is set out in the Health and Safety in Employment Act 1992.

The Health and Safety in Employment Act (HSE) says that both people who are responsible for work (employers) and those who do the work (employees) must take steps to ensure their own health and safety and that of others.

Regulation

A number of regulations support the HSE Act including:

- HSE Regulations 1995
- Mining Administration
- Mining Underground
- Asbestos Regulations
- Pressure Equipment and Cranes
- Petrol Exploration and Pipelines

Codes of Practices

The Minister of Labour may approve a statement of preferred work practices. These are called codes of practices. They describe how an employer will go about taking all practicable steps to ensure the safety of the employees. More information about Codes of Practices can be obtained from:


The HSE Act sets out employer responsibilities and employee rights. It covers all employees in New Zealand whether they are temporary, part-time or full-time workers. The object of the Act is to promote the prevention of harm to all persons at work and other persons in, or in the vicinity of, a place of work. This is done by employers having excellent systematic management of health and safety. The systems and practices, that are required under the Act, are set out below.

System and Practices
Hazard Management

1. Hazard Identification

Employers must ensure the safety and health of the employees by identifying hazards.

For example, hazards can be:
- Physical hazards: noise, dust, vibration, temperature, radiation
- Chemical hazards: cleaning agents, solvents, paint fumes, diesel, exhaust fumes
- Biological hazards: infectious disease, bacteria, body fluids
- Work design hazards: ergonomic hazards, working alone, protective clothing
- Stress hazards: workload, shift work, long working hours, discrimination and harassment.

2. Hazard Control

Employers must take all practicable steps to control significant hazards that cause serious harm.

Significant hazards are controlled through a system of elimination, isolation and minimization. Where significant hazards are minimized, the employers must monitor the effectiveness of the control.
3. **Hazard information**

Employers must supply information to employees and health and safety representatives about:

- Emergency procedures
- Identified hazards in the workplace
- Where safety equipment and clothing is kept
- Health and safety issues and systems

4. **Monitoring**

Where there are significant hazards that are being controlled through the use of protective clothing and equipment, employers must monitor its effectiveness.

For example:

- Noise: Hearing test and noise survey
- Poor lighting: Eye examinations and test lighting levels
- Fatigue: survey hours of work and check shift patterns
- Chemical exposure: lung function tests and urine tests and check workplace exposure

The results of monitoring must be given to those workers who have been monitored.

5. **Emergency Readiness**

Employers, health and safety representatives and workers must plan how to manage emergencies.

- Man made emergencies: for example, armed robbery, bomb threat, chemical spill, fire, gas leak, power failure, vehicle accident, injury to worker
- Natural emergencies: for example, earthquake, flood, tsunami, heavy snow fall
6. Effective Employee Participation

Why we have health and safety reps?
- to give workers an independent voice in health and safety on the job
- to improve health and safety on the job
- to develop expertise amongst workers about their rights

Health and safety representatives
- they are elected by workers and represent their rights
- the health and safety representative is independent of employers, but needs their support; the relationship must be based on good faith
- to be effective they need paid time for training, and paid time to carry out their functions, and employers must pay for the training
- the health and safety representative must be kept informed about health and safety in the workplace
- the content and amount of training is supported by legislation
- unions play an important role in supporting health and safety representatives
- the role of the health and safety representative is set out in legislation, but additional functions can be added
- the h and s rep can be the workers representative on the h and s committee
- the h and s rep needs to be able to have access to workers both one to one and in meetings without the employer being there, during work time, whilst on pay- how much time would need to be agreed
- the health and safety representative can advise employees on their right to refuse unsafe work
- health and safety representatives could consult with Department of Labour inspectors on health and safety issues
- health and safety reps promote the interests of employees who have been harmed at work including assisting them to rehabilitate and return to work
- the health and safety rep acts on behalf of employees both individually and collectively by bringing to the employers’ attention hazards and discusses with the employer ways to manage the hazards
- the health and safety rep must not be discriminated against, or dismissed because they are carrying out their role
- the health and safety rep can make a recommendation to the employer to make an improvement
- the employer must reply or implement the recommendation
- the Hazard Notice is a legal warning made to the employer by the trained h and s rep
- the Hazard Notice can be sent to the Department of Labour

7. Training and Supervision

Workers must be trained in safe working procedures, emergency procedures and to use protective equipment and clothing. They must be supervised until they can work safely.

8. Injury Management, Rehabilitation and Safe Return to Work

Where employees are injured, the accident compensation scheme provides assistance to restore the person’s health, independence and participation in the workplace, their home and in their community.
If treatment is needed after injury, the accident compensation scheme will pay either all or parts of the cost of:
- Doctors’ visits
- Surgery
- Physiotherapy

The accident compensation scheme may assist the injured worker by providing them with assistance such as hearing aids, wheelchairs.

The accident compensation scheme also provides weekly payments to workers who are unable to return to work. The rate of payment is 80% of the pre-injury income.

9. **Contractor Management**

People who employ contractors must take all practicable steps to ensure that the contractors or the employees will not be harmed while doing any work they were engaged to do.

10. **Incident, Injury Reporting and investigation**

Workers should report an injury or incident to the employer. The employer should have an incident or injury register. If the injury is serious, it should be notified to the Department of Labour.

Employers, with the health and safety rep and affected employees, should investigate the cause of the incident or injury. Once the investigation has been completed, the results of investigation should be feedback to those involved.

When investigating an accident, the steps to follow are:
- What happened?
- Why did it happen?
- What are we going to do about it?
- What feedback would be given to workers?

11. **Provision of Protective Equipment and its location**

The employer must provide employees with proper protective clothing and equipment. An employer can’t pay an employee an allowance or extra wages instead of providing the protective clothing and equipment. Nor can an employer require an employee to provide his or her own protective clothing or equipment.

12. **The Role of the Department of Labor**

The HSE Act is criminal law. The penalties for a breach of the Act can be:
- Fines
- Imprisonment
- Payment of money to the victim of accidents

The Department of Labor is the government agency responsible for enforcing the Act. Inspectors are employed to investigate accidents, inspect the workplace and provide education and information to both employers and employees and health and safety representatives.

Serious harm injuries must be notified by employers to the Department of Labor, who can then investigate the source of the harm.
Health and Safety representatives can advise the Department of Labour when they have issued a hazard notice. The inspector can then investigate and if necessary, enforce any breach of the Act. Or they can require employer to improve the work process.

13. **New Zealand Council of Trade Unions (NZCTU)**

The NZCTU has an approximately 350,000 union members affiliated to it. The NZCTU is funded through the accident compensation scheme to provide training to health and safety representatives. It receives $1.3m a year to train health and safety representatives.

The HSE Act requires employers to release health and safety reps for two days training on pay a year. The NZCTU is the main trainer in New Zealand for Health and Safety reps. It offers health and safety reps training in their responsibilities and rights at work. More information can be obtained from the NZCTU websites: www.worksafereps.org.nz; or www.union.org.nz.

Hazel Armstrong, Zhou Hongfang, Lei Zhigang - April, 2007
新西兰职业安全与健康体系

在新西兰，《职业健康与安全法》为健康与安全提供了法律依据。

《职业健康与安全法》

《职业健康与安全法》规定雇主与雇员必须采取措施确保自己与他人的安全与健康。

规章

辅助《职业健康与安全法》实施的规章包括:

- 职业健康与安全规章（1995年）
- 采矿管理
- 井工开采
- 石棉规章
- 压力设备和起重机
- 石油勘探和管道

操作规程

新西兰的劳工部部长可以批准更好的操作程序。这被称为操作规程。规程规定了雇主如何采取可行的步骤来确保员工的安全。更多关于操作规程的信息请访问网站www.dol.govt.nz。

《职业健康与安全法》确定雇主的责任与雇员的权利。该法所覆盖的对象包括新西兰所有临时、全职或兼职的工人。该法旨在促进预防工作人员或在工作场所或附近的人员受到伤害。这要求雇主拥有良好的健康与安全系统管理。按法律要求设立的体系与规程如下：
体系和规程

体系与规程
雇主应该配备怎样的安全体系与规程来预防受伤与疾病？

危害管理
- 危害识别
- 危害控制
- 危害信息

健康管理

提供保护设备及放置场所

应急准备

雇员有效参与

培训与监察

受伤管理、复原、安全复工

承包人管理

事故、受伤报告及调查
危害管理

1. 危害识别
雇主必须要对危害进行识别，从而保证雇员的安全与健康。例如，危害包括：
- 物理危害：噪音，粉尘，振动，温度，辐射
- 化学危害：清洁剂，溶剂，漆，柴油，尾气
- 生物危害：传染病，细菌，体液
- 工作危害：人体工程学危害，单独工作，防护服不足
- 压力危害：装卸，晚班，长时间工作，歧视与骚扰

2. 危害控制
雇主必须采取切实的措施来控制会导致严重后果的重大危害。要通过采用消除、隔离和最小化的方式来控制危害。而且，对那些被最小化的危害进行监控，确保其有效性。
3. 危害信息
雇主必须向雇员、健康与安全代表提供如下信息：
- 应急程序
- 识别工作场所的危害
- 安全设备与防护服的放置场所
- 健康与安全问题及体系

4. 监控
在通过使用保护设备和服装来控制重大危害的地方，雇主必须监控其有效性：
例如，
- 噪音：听力测试和噪音调查
- 微光：眼睛检查和亮光检查
- 劳累：调查工时和检查换班形式
化学危害  肺部检查和尿液测试及检查工地环境

必须将监控结果告知接受监控的工人。

应急准备
雇主、健康与安全代表以及工人必须制定应急计划。
- 人为紧急事件：例如，抢劫，炸弹，危化品，火，气体泄漏，断电，交通事故，工伤
- 自然紧急事件：例如，地震，洪水，海啸，雪崩

雇员的有效参与

我们为什么拥有健康与安全代表？
- 工人可以就职业健康与安全问题提出独立的建议
- 促进职业健康与安全
- 培养熟悉工人权利的专家

健康与安全代表
- 由工人选举产生，代表雇员的权力
- 他们不受雇主约束，但需要他们的支持，在彼此信任的基础上合作
- 他们需要花费时间来接受培训才能达到效果，并履行职责，雇主主要支付培训费用
- 代表对工作场所的健康与安全问题有知情权
- 立法对培训内容和数量有规定
- 工会在支持健康安全代表工作方面起了重要作用
- 法律已经对代表的作用做了规定，其他职能还可再补充
- 该代表也可是健康与安全委员会中的工人代表
- 与雇员进行交流的权利
- 健康安全代表有权在雇主不在场的情况下在工作期间与工人单独接触和开会，但时间长短需要与雇主协商，所有参加这些会议的人员的工资不受影响。
- 代表可以建议工人行使权力，拒绝进行危险作业
- 代表可与劳工部监察员探讨安全健康事宜
- 帮助保护工伤员工的利益，包括帮助他们康复和复工健康安全代表既可代表个体雇员的利益也可代表集体的利益，让雇主知道隐患，并和其讨论如何控制这些隐患
- 代表不能因为行使职责而受到歧视或被解雇代表可以向雇主提出改进建议
- 雇主必须对建议做出回答或进行实施危险通知是健康安全代表向雇主发出的合法警告
- 危险通知可以递交给安全机构
培训与监察
工人必须接受安全工作规程、应急规程和如何使用防护设备与服装的培训。他们必须接受监督，直到能够自己安全工作。

受伤管理、复原、安全复工
员工受伤后，事故赔偿机制将为其恢复健康，独立和重新融入工作，家庭和社区生活提供帮助。若受伤后需要治疗，事故赔偿机制会承担以下的全部或部分费用：
- 医生临诊
- 手术
- 物理疗法
事故赔偿机制还可以通过向其提供助听器，轮椅等帮助受伤员工。
事故赔偿机制还每周向不能复工的工人支付赔偿，费率按伤前工资的80%计算。

承包人管理
雇佣承包商的雇主必须采取所有实际操作来确保承包商或员工在从事工作时受到伤害。

事故、受伤报告及调查
工人应该向雇主汇报伤情或事故。雇主应该有个事故或伤情记录簿。如果伤情严重，应向劳工部汇报。雇主，安全与健康代表和相关员工应该参与调查伤情或事故原因。一旦调查结束，调查结果应该反馈给所有相关人员。

调查事故时，应按以下步骤：
- 发生了什么？
- 为什么发生了？
- 我们该怎么处理？
- 应给予工人的反馈信息

提供保护设备及放置场所
雇主必须向其员工提供合适的防护服装和设备。雇主不能向其雇员提供补贴或额外工资来代替防护服装和设备。雇主也不能要求员工自行提供自己的保护服装或设备。

劳工部的职责
《职业健康与安全法》是刑事法律。违反该法律会遭受以下处罚：
- 罚款
- 监禁
- 对事故受害者支付赔偿

劳工部作为政府机构，负责执行该法案。劳工部雇有监察员负责调查事故，检查工作场所，为
雇主，员工和安全与健康代表提供培训和信息。雇主必须向劳工部汇报重大伤害事故，劳工部将介入调查事故原因。安全与健康代表在发出危害通知后可以告知劳工部。在必要的情况下，劳工部会派监察员进行调查，包括任何违反法律的情况。他们也可以要求雇主改善工作程序。

新西兰总工会

新西兰总工会共有大约300,000附属工会成员单位。事故赔偿机制为其提供基金来对安全与健康代表提供培训。《职业健康与安全法》要求雇主允许安全与健康代表每年接受2天带薪培训。新西兰总工会是对安全与健康代表进行培训的主要实施单位。通过培训使他们了解其责任与权利。更多信息可以查看新西兰总工会网站：www.worksafereps.org.nz；或www.nzctu.org.nz。

黑兹尔·阿姆斯壮
周宏芳
雷志刚

2007年4月
Appendix 3 - Coalcorp West Mine Explosion Case Study

BACKGROUND INFORMATION

Coal Seam:
- Sub bituminous
- Fractured and cleated
- Faults and folds
- Undulating floor
- Weak roof and soft floor
- High risk of spontaneous combustion
- Moderate gas make

Mine Operation
- Around 300 men working at the mine
- 5 day production @ 3 shifts per day
- Roadheader and Continuous Miner development
- Continuous Miner extraction - panel split and fender method
- Longwall extraction – retreat up dip using shearer
- Roof support - Roof bolts with resin anchor in continuous miner panel development and extraction
- Strata support - Yielding steel sets:
  - Full arch sets in main road development
  - Semi arch ‘camber’ sets in longwall gate road development.
- Weekends (Saturday & Sunday):
  - Saturday morning maintenance work
  - Mine official daily inspection
- Underground monitoring:
  - Tube bundle system - 24 hours / day, 7 days / week for CH₄, CO, CO₂ and O₂ levels
  - Control room on surface
  - Alarms and automatic telephone operation when control room and mine not manned
- Inspections:
  - Shift working place inspections
  - Daily mine inspections
  - Hand held gas monitors for CH₄ and CO
- Nitrogen injection line
- Emergency equipment underground
- Water and compressed air systems

Legal Requirements
- Mining Regulations
- Coal Mine Inspector
- Check Inspector
- ‘Hot’ seals – 48 mine stand down (all men out of mine)

Mine History
- Complex geology
- Difficult ventilation management
- Spontaneous combustion events
- Difficult longwall start up and operation
- Difficult continuous miner extraction at depths greater than 240 metres
Longwall Extraction at Time of Event
• Face stopped because of major fall along face line due to complex geology
• Heatings occurring behind the chocks
• Face sealed and opened up regularly
• Mines Rescue teams active behind seals to combat heatings and fires
• Nitrogen injected behind chocks

Continuous Miner Extraction at Time of Event
• Extraction at depths 290 – 300 metres
• Roof support problems

Mine Plan:
• Plan of mine just before Event will be displayed on training room wall and described during session
Appendix 4 - Case Study - a gas explosion in a Chinese mine

Jianxin mine gas burst in 2001 – based on an accident report from SAWS.

Jianxin mine was put into production in 1961. It was a Coal and Gas bursting mine.

The participants were given basic facts:

Xinjian coal mine – gas burst during blasting; 20 killed, 28 injured in 2001
- A new mine sunk in 1958
- Producing 600,000 tonnes per year
- Known to be at risk from gas bursting
- Design length of face 140 metres
- Ventilation – one fan @ 126 cu metres per minute

The group was asked:
- What were the likely factors behind the accident?
- What should happen to prevent it happening in the future?
- Who should do what?

The 30 participants were put into groups, and were asked to report back and write their comments on the white board.

The report back:
- As a high gas outburst mine must have been some gas drainage problems, some malfunctions
- Did the miners have self-rescuers?
- Did they know how to use them?
- Must be a ventilation system problem
- Safety management not good enough
- Problems with the rescue system
- Was there an outburst control system in place?

David Creedy said:
- High emission - gas pressure in the coal is high.
- There would need to be gas drainage, as there would be gas coming from adjacent seam and the working seam.
- They needed to pre drain the gas before working.
- The blast relieved the pressure – which caused the outburst.
- The ventilation system was destroyed, so men on adjacent faces were affected.
- But before blasting, the miners should have been withdrawn to the intake side.
- The fundamental fault was lack of suitable outburst prevention, and they did not follow the safety procedure of withdrawing to a safe place.
- Before you fire, announce that the blast will occur soon.

- Outburst caused by the blast.

David Creedy:
- There isn’t a method for testing for possible coal gas bursts in China, that matches the system that is available in Australia. There would not have been prior warning of the gas levels prior to the event.

- There needs to be an elaborate outburst prevention strategy. Always withdrew men prior to blasting, Even self rescuers would have been no use. Needed breathing apparatus. The safety management official needed to check the area and say it was clear.

- Prevention of the outburst – need to reduce the gas pressure- drill bore holes on the face of the headings and the sides. The bore holes should be draining for 12-18 months. In Australia – a core sample is taken to check the gas levels before it is safe to mine. Mining takes place knowing that an outburst might take place. Mining outburst prone coal is more expensive to mine.

- If there are alternative places to mine, the production will go there. In the UK mines with outbursts were closed. In the small mines, where there is not the skill and technology, then mining outbursts pose a risk.
Appendix 5 - The Safety Concept
Appendix 6 - Occupational disease

When mining was mechanised dust exposures grew, so pneumoconiosis increased. It usually takes a few years to get this disease. In the first years of mechanisation not much done to control dust levels. In Britain, a programme was put in place to suppress dust on the cutting machines. It was successful and the pneumoconiosis was reduced. In the 1980's UK went through another level of technical revolution, so the coal faces were equipped with heavy duty cutting machines, and conveyors. With the new equipment more coal could be produced from one coal face. The company wanted to run them 24 hours a day. They wanted continuous cutting time. As production increased, there was much more dust.

The Govt at the time was not sympathetic to the workers, so the Govt reduced the standards of the law. The Govt abolished the hours of work regulations for miners – 8 hours per shift plus one winding time (other winding time included in 8 hours) to get to the surface of the shaft - in 1908. Over the next 30-40 years the hours were reduced to 7 1/4 hours plus one winding time. This was by way of an agreement with the union. The law stayed at 8 hours. The pressure on management was to work longer shifts to get a return on the investment. Miners ended up working more hours per shift.

1974  UK pneumoconiosis scheme- different levels of illness, provided different levels of payments for miners. There was no need for miners to go to Court for compensation.

For bronchitis and emphysema the UK miners wanted a Govt scheme like that for pneumoconiosis. But the Govt would not agree to it. So the miners union took the companies to Court and won. The next Govt had to provide for these miners. Every retired miner could claim. The relatives of the miners who were dead, could also claim. This has cost 100b Yuan (7 bn pounds).

It will cost this much because:
- Payments to miners and their families
- Cost of administration
- Legal fees

Only one third will go to miners. Some of the law firms have built huge offices.

Staff should be involved in dust suppression. There should be a correlation between dust standards and international standards. Those who monitor need to be especially well trained. Dust suppression engineers should be separated from those involved in the management of production. There should be good co-ordination between those providing the technology and those involved in dust suppression.
Appendix 7 - Benefits of Safer Working.
David Creedy, Wardell Armstrong Engineering and Environmental Solutions

Benefits of safer working
Fewer lost working days
Better motivated workforce
Improved image to public and customers
No mention of better health and well being for workers, nor reduction in cost to nation

Problems in mining occur everywhere in the world. All mines are potentially hazardous. All humans are prone to failure. Slide shows an explosion incident in Australia.

Safety management failures in mines:
Australia – Moura No 2 1994 11 deaths
Canada Wetray 1992 26 deaths
Ukraine 63 deaths
USA Sago 2006 12 deaths
China Fuxin 2004 214 deaths
China 2006 4,746 deaths

Accidents in developing countries
• Obsolete Russian equipment- it reaches the end of its life
• Lack of management skills- difficult to attract new modern management into those areas
• No safety culture
• Poor rewards- no incentive for safe working, the jobs can be poorly paid
• Investment needed-modernising mines leads to get modern equipment, modern management, and better paid staff who are more motivated- access to investment is an important aspect to improving safety.

You need effective safety management
• Safety culture in the workforce
• Co-operation of the workforce- they have to believe in what they are doing
• Technology to do the job
• Technology to aid safety- e.g. lifting gear – the right gear for the job, proper training, plan so that the right gear is there at the right time. Technology by itself is not a solution. Technology only works if it used in the correct way for what it was designed for.
• Total management commitment – from the top and they must demonstrate his commitment- everyone follows the same rules

Safety Management System
• Policy- Aim – what do you intend to do? What needs to be achieved? E.g. a safety management system for different parts of the process- haulage. Strategy- how will you achieve safe working with that particular job.
• Organisation- who is responsible and who does what? Identified the tasks of the individuals. This will include officials and operators.
• Planning- how to design work safely. For a particular activity what are the Risks, what can go wrong? If my child has to cross a road, you would do a risk assessment? How do I minimise the risks of injury to my child when I send them to school. If there is a busy road, how do I ensure there is no risk of the child getting run over. I could send them with Grandma, but she is old; or there is a bridge across the road; this way of thinking is- what are the risks? and the various solutions to reduce the risk are control measures. (The problem with this example for a NZ audience is that it is paternalistic – and thus David omitted - involve employees in this risk assessment). However, David Feickert then talked about the NZ system where kids can write down the names of errant drivers and send it to the authorities; and the use of lollypop people to stop
the traffic, with the support of the authorities. An engineering solution may be to put in place an over bridge but the kids may not use it.

- Monitoring: measure how well the safety management system is performing. Establish criteria for measurement—e.g., number of accidents per shifts worked; gas control procedure—gas concentration levels do not go over 1%
- Audit and review: every year an independent party looks at the system and makes recommendations to improve it. Are the rules working and are they preventing accidents. If not, improve them. If a safe working procedure takes too long to implement, then it is not designed correctly.

Planning
- Risks
- Control measures
- Suitable technologies
- Technical support
- Procedures

Attitudes
- Macho image: miners are tough people and they like people to think they are strong. “I can lift that.”
- Social and living conditions: small mine in Sanxhi— I don’t care if I get killed, it’s a blessed relief.
- Poor prospects for improvement: if you have a family, a house, more money, then life changes. Economic development and the improvement of life helps with safety.
- Low value of life: need to raise people out of poverty.
- No self esteem
- Poor education
- Inadequate training
- Peer and parental pressure: the pressure from colleagues. If everyone is tired at the end of the shift—there is a conveyor belt, and they all get on, do you?

Job Pressures
- Mechanisation
- Unfamiliar equipment
- Production demands
- Fewer staff
- More responsibility
- Cost reduction
- Difficult working conditions—going deeper

How do we change all of this?

Raise awareness
- Incentives and rewards: safety mortgage system—salary is withheld—and if safe working, then that is paid (oh dear!—this could create pressure to suppress claims, incidents, and the peer pressure would against reporting)
- Safety suggestions
- Competitions
- Posters
- Training
- (No mention of worker involvement)
Training
- Safety management system
- Risk assessment
- Workplace environment
- Self-help
- Use of safety equipment
- First aid techniques
- Case studies
- (no mention of worker rights nor about standards)

Some problems are criminal, like smoking underground. Other problems for instance leaving some equipment on the ground that someone trips over is a less serious matter which should not be treated as a criminal matter.

Accelerate Change
- Develop training schemes
- Look overseas then adapt
- Concentrate on train the trainers
- Publicity material
- Educate the young- the safety culture must start at school. Every parent must start to educate their children about how to live in a safe way. Thousands of accident a year affect children. Start safety awareness in the home. Look at things in your home. How can I make it safer? How do I prevent burns from hot water?

Assessing risks should be a natural part of life. There is a lack of safety awareness e.g. in aeroplanes the most likely time you will be hurt is when the aeroplane is taxi-ing; there are seat belts in cars but many don’t use them.

China is producing more and more coal. 2b now by 2020 will be 4b tonnes per year.
Chart 1: UK fatal coal mine explosions by cause – 1860s – 1970s

EXPLOSIONS

Peter McNestry, *UK Coal mine fatal explosions by cause 1866-1975*, evidence presented to the Roundtable on Coal Mine Safety in China held by the Congressional-Executive Commission on China, Washington, 10 December 2004
Appendix 9 - PowerPoint 1

**Mine Safety Course**
- Introductions
- Outline of Course Content and Teaching Process
- Case Study
- Discuss Issues and Answer Questions
- Task Groups

**COALCORP WEST MINE HUNTLY CASE STUDY**

**THEN**
- What Happened
  - Ventilation Plan
  - Identify Hazards
- Task 1A
- Feedback from task groups
- Feedback from tutors
- Task 1B

**HAZARD MANAGEMENT**
- Task 2
- Feedback from task groups
- Feedback from tutors

**COALCORP WEST MINE HUNTLY CASE STUDY**

**THEN**
- Coal Mines Act
- Coal Mines Regulations
- Explosive Act
- Explosive Regulations
- Plus many more Acts and Regulations
- Check inspectors underground
- Task 3A
- Feedback from task groups
- Feedback from tutors
- Task 3B

**THEN **
- Health and Safety in Employment Act
- Health and Safety in Employment Regulations (3)
- Health and Safety Representatives
- Underground Inspections and Reporting

**EMPLOYEE PARTICIPATION**
- Check inspectors underground
- Union involvement
  - Miner
  - Trades
  - Supervisor
- Task 4A
- Feedback from task groups
- Feedback from tutors
- Task 4B

**COALCORP WEST MINE HUNTLY CASE STUDY**

**THEN **
- Health and Safety Representatives
- Discussion with employees
- Representation
- Advocacy
- Recommendations
- Hazard notices

**COALCORP WEST MINE HUNTLY CASE STUDY**

**NOW**
- Task 4C
- Feedback from task groups
- Feedback from tutors

**Case Study**
- Description of Mine
- Background Handout and Questions
- Event
  - Catastrophic Explosion Wednesday 23rd September 1992 4.45pm

**Task Groups**
- Task Groups
COALCORP WEST MINE HUNTLY CASE STUDY

THEN RISK NOW
- Spontaneous Combustion Event Assessment
- Reactive

TASK 6A
- Feedback from task groups
- Feedback from tutors
- TASK 6B

COALCORP WEST MINE HUNTLY CASE STUDY

THEN TRAINING AND SUPERVISION NOW
- Supervisors
  - Off job informal
  - Examination
  - Miners
  - On Job informal

TASK 7A
- Feedback from task groups
- Feedback from tutors
- TASK 7B

INJURY AND REHABILITATION

CASE STUDY: SERIOUS HARM
- Injury reporting
- Injury investigation
- Travel to hospital
- Treatment
- Compensation
- Assistance
- Return to work
- Retrain
- Return to full time work

TASK 9A
- Feedback from task groups
- Feedback from tutors
- TASK 9B

WORKPLACE PLANNING
- Systems
- Operational process
- Attitude
- Skills
- Employee participation

LAW
- INVESTIGATE
- LEGISLATE
- MODIFY
  - BEHAVIOUR
  - SYSTEMS
  - OPERATIONAL PROCESS
  - ATTITUDE
  - SKILL
  - EMPLOYEE PARTICIPATION

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HAZARD MANAGEMENT

CONTINUOUS IMPROVEMENT

Review → Plan → Action

Systems and practices

What health and safety systems and practices should employers have in place to prevent injury and illness?

HAZARD AND SAFETY SYSTEMS

- Emergency procedures
- Effective employee participation
- Training and supervision
- Incident management

Review

Plan

Action
矿山安全课程

- 介绍
- 案例分析
- 案例讨论和问题回答
- 课程任务分配

煤炭公司亨特利西部煤矿案例分析

事故当时

- 发生了什么
- 通风设计
- 确认危险

- 任务1A
- 各小组的反馈
- 指导老师的反馈

危险管理

- 任务2
- 小组的反馈
- 指导老师的反馈

煤矿法
- 煤矿法规
- 爆破法
- 爆破法规
- 以及更多的法律法规
- 井下监察人员
- 健康与安全代表
- 工会涉及
- 矿工 - 贸易

- 任务3A
- 小组反馈
- 指导老师的反馈

- 任务3B

- 任务4A
- 任务4B
- 任务4C
- 雇员的参与
- 井下监察人员
- 健康与安全代表
- 与雇员进行交流
- 代表权
- 防护权
- 健康权
- 危险通知

煤炭公司亨特利西部煤矿案例分析

当时 — 法律 — 现在

- 常工法中的健康与安全规定
- 雇佣条例（3）中的健康与安全规定
- 健康与安全代表
- 井下检查和报告

- 任务3A
- 小组反馈
- 指导老师的反馈

- 任务3B

- 任务4A
- 任务4B
- 任务4C
What health and safety systems and practices should employers have in place to prevent injury and illness?

1. Hazard management
2. Hazard identification
3. Hazard control
4. Hazard communication
5. Monitoring

Emergency readiness

Effective employees' participation
Training and education

Duty of employers

Contractor management

Employee involvement

Injury management

Employee's return to work

Dispute resolution and investigation

Continuous improvement

Reflect

Planning

Action

Health and safety systems and practices

- Incident management
- Hazard identification
- Hazard control
- Hazard communication
- Monitoring
Appendix 10 - PowerPoint 3

China – New Zealand Mine Safety Co-operation
Hazel Armstrong (NZ), David Creedy (UK), Dave Feickert (NZ/UK)

International Review of Mine Safety
• Some examples from:
  • US,
  • South Africa,
  • UK,
  • Canada,
  • New Zealand,
  • China

Accident prone periods
• UK 1880 – 1950
• US 1900 – 1960
• Japan 1948 – 1974
• China ?
• AIM: reduce fatality rate per 100 million yuan GDP by 35% during 11th Five year plan
• Source: Minister Li Yizhong

Sustainable development: Worker protection - Issue One
Safety and Health
The coal industries in the developed countries have solved many, but not all hazards. A large amount of safety expertise now exists – how can China and other developing countries gain access to it in order to shorten their accident prone periods?

US and China: a comparison
Fatal accidents per 1 million tonnes of coal, 2006

<table>
<thead>
<tr>
<th>Country</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>0.047</td>
</tr>
<tr>
<td>China</td>
<td>2.40</td>
</tr>
</tbody>
</table>

China averages 1992-2001

<table>
<thead>
<tr>
<th>Category</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOE mines</td>
<td>1.19</td>
</tr>
<tr>
<td>Small mines</td>
<td>9.13</td>
</tr>
</tbody>
</table>

Sago, West Virginia, US, 2006
• Methane gas explosion in sealed-off old working area
• 12 dead
• 1 rescued
• 14 walk to safety
• Many safety violations
• New Miner Safety Law passed by US Congress
US – A New Approach After Sago?

- The industry needs a better safety culture based on managing risk and a culture of accident prevention.
- Today, safety decisions are routinely made at every mine; but now they must be made proactively and systematically.
- Start with a mine-specific, bottom-up approach that analyzes the individual risks of each mine independently of the others and then develops safety plans accordingly.
- Treat each mine as a series of separate training and technology safety challenges, much as a physician examines each patient’s condition before prescribing treatment. This way safety threats can be better anticipated and action taken before they become accidents.
- Aim for a zero lost time accident rate.

South Africa and China: a comparison

<table>
<thead>
<tr>
<th>South Africa – all mining</th>
<th>China, 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartheid period</td>
<td></td>
</tr>
<tr>
<td>1 per 1,000</td>
<td>1 per 1,000</td>
</tr>
<tr>
<td>2005</td>
<td>0.46 per 1,000</td>
</tr>
<tr>
<td>0.46 per 1,000</td>
<td>1 per 1,000</td>
</tr>
</tbody>
</table>

South Africa

- JOHANNESBURG, Jan. 11 2006 (Xinhuanet) –
- South Africa’s mining industry reported 202 fatalities during 2005, down from 246 deaths in 2004, the Department of Minerals and Energy said in its monthly safety report.
- "Zero fatalities and injuries is the ultimate goal. In reaching this goal, the milestones are to reduce the fatality and disabling injury rate by 20 percent in the industry as a whole,” the Mine Health and Safety Inspectorate 2004/05 annual report said.
- The provisional fatality rate for the period January 1, 2005 to December 31, 2005 was 0.46 per 1,000 persons at work, down 18 percent from 0.56 per 1,000 persons at work in 2004, the report said.

UK Daw Mill Mine 2006/7

Three fatal accidents in one year

- Mine deputy suffocated by methane
- Miner killed – run over by coal haulage tub
- Miner killed by tunnel wall fall of ground – wall supported by roof bolts

UK historical background

- In 1913, its peak output year, the UK had a fatal accident rate of 6.2/million tonnes, compared with 2.5/mt in China in 2006;
- Over 100,000 miners have been killed at work in the UK, since records were first kept in 1850;
- The other developed countries with major coal industries went through the same experience. Then, there was no one else to help.

Canada 2006

- 72 miners trapped underground by a devastating fire at a Canadian potash mine shortly after the Sago disaster, were not only rescued 24 hours later but credited their survival to the safety training they had received.[1] Their union, the Communications, Energy and Paperworkers, had pressed for training in paid time to prepare for underground disasters.

New Zealand

Solid Energy's East Mine, Huntly, 2006
• Zero lost time accidents
• One key feature: all miners are trained in:
  • Gas testing
  • First aid
  • And miners are paid their full wage, including bonus during training

China – major accidents, deaths

<table>
<thead>
<tr>
<th>Year</th>
<th>Accidents</th>
<th>Deaths</th>
<th>Output mt</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>2,863</td>
<td>5,798</td>
<td>999</td>
</tr>
<tr>
<td>2001</td>
<td>3,082</td>
<td>5,670</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>4,344</td>
<td>6,995</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>4,143</td>
<td>6,434</td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>3,639</td>
<td>6,027</td>
<td>1,956</td>
</tr>
<tr>
<td>2005</td>
<td>3,341</td>
<td>5,986</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>4,746</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: China State Administration of Work Safety

China and the world

Fatal accident rates in coal mines:
• 2 times higher than South Africa in 2006;
• 10 times higher than other non-OECD;
• 40 times higher than OECD;
• 50 times higher than US in 2006;
• Australia and New Zealand are twice as safe as US
• Source: China, South Africa, US governments

US – coal mine fatal accidents 2000-6

<table>
<thead>
<tr>
<th>Year</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>38</td>
</tr>
<tr>
<td>2001</td>
<td>42</td>
</tr>
<tr>
<td>2002</td>
<td>27</td>
</tr>
<tr>
<td>2003</td>
<td>30</td>
</tr>
<tr>
<td>2004</td>
<td>28</td>
</tr>
<tr>
<td>2005</td>
<td>22</td>
</tr>
<tr>
<td>2006</td>
<td>47</td>
</tr>
</tbody>
</table>

New Zealand and Australia

• New Zealand and Australia have accident rates per million hours worked which are half the US rate.

• New Zealand’s state owned coal company, Solid Energy has set itself a target of a zero lost time accident rate for its underground mines.

Sustainable development: Issue two – safe and clean coal production and consumption

• From the coal face to the power station smoke stack:
• Cut accidents to zero
• Clean up coal consumption
• Cleaner coal technology
• Carbon capture and storage
• Improve energy efficiency
Carbon and global warming: the safety of the planet

- G8 plus 5 agreed to reduce carbon dioxide emissions from burning fossil fuels, June 2007;
- Can the expertise in cleaner use technologies be sped up to shorten the "accident prone" period for the world?
- This period is NOW.
- Keep global warming increase within 2 degrees C by 2050 – EU and UNIPCC.

Carbon and Climate – *Issue two*: fossil fuel use – top 13 countries, mtoe

<table>
<thead>
<tr>
<th>Country</th>
<th>Fossil Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td>China – coal</td>
<td>956.9</td>
</tr>
<tr>
<td>US – oil</td>
<td>937.6</td>
</tr>
<tr>
<td>US – gas</td>
<td>582.0</td>
</tr>
<tr>
<td>US – coal</td>
<td>564.3</td>
</tr>
<tr>
<td>Russia – gas</td>
<td>361.8</td>
</tr>
<tr>
<td>China – gas</td>
<td>368.6</td>
</tr>
<tr>
<td>Japan – oil</td>
<td>241.5</td>
</tr>
<tr>
<td>India – coal</td>
<td>204.8</td>
</tr>
<tr>
<td>Russia – oil</td>
<td>128.5</td>
</tr>
<tr>
<td>Germany – oil</td>
<td>123.6</td>
</tr>
<tr>
<td>Japan – coal</td>
<td>120.8</td>
</tr>
<tr>
<td>India – oil</td>
<td>119.3</td>
</tr>
<tr>
<td>South Korea – oil</td>
<td>104.8</td>
</tr>
</tbody>
</table>

Sustainable coal use

- Clean up Sox, Nox, particles
- Clean coal technology – supercritical boilers; IGCC plant;
- CCS - Carbon capture and storage – bury CO2;
- Cleaner coal production, better washing;
- Land restoration

From Inner Mongolia to New Zealand

- Ecology – human and planetary
- Sustainable development means both safety and health for miners and safety and health for the planet
- CO2 knows no national borders
- Expertise and technology to make mines safe and the world safe should not either
What happens to injured workers in New Zealand?

An overview of New Zealand’s no-fault injury prevention, rehabilitation and compensation scheme.

From Hazel Armstrong, ACC and Employment Lawyer

Outline of presentation

• The Social Contract – no right to sue in return for a comprehensive, ‘no-fault’, injury prevention, rehabilitation, and compensation scheme (ACC)
• The five founding principles of New Zealand’s ACC scheme
• Community responsibility
• ACC in the NZ context
  – Administration
  – Levy setting
  – Claim rates
  – Mining claims in New Zealand

The presenter

• Hazel Armstrong
• Lawyer specialising in health and safety in the workplace, employment law, ACC
• Author of Personal Injury in New Zealand
• Works with the New Zealand Council of Trade Unions, unions, and workers
• Former ACC board director
• Government-appointed Chair of a Panel concerned with occupational disease

Outline of presentation

• Focus on work account – workers and the self employed who are injured at work
• Injury prevention
• Health and safety representative training
• Complete rehabilitation
  – Treatment
  – Vocational
  – Social
• Real compensation
• Other forms of compensation – lump sums

The Social Contract

• New Zealand abandoned the right to sue in cases of negligence resulting in physical injury or death in 1974. Since then, the injury - whether fatal or not - is covered by the Accident Compensation Scheme.
• Thus, employers cannot be sued for compensatory damages arising from a physical injury sustained in the workplace - if that physical injury is covered by the Accident Compensation Scheme.
• However, employers can be sued for exemplary damages in the rare situation where the employer’s negligence is so gross as to amount to intentional disregard for the worker’s safety and health. This has rarely happened in New Zealand and the awards of damages, when made, are small.
The five founding principles of New Zealand's ACC scheme

- Community responsibility
- Comprehensive entitlement
- Complete rehabilitation
- Real compensation
- Administrative efficiency

Community responsibility

- Accident Compensation Corporation (ACC) is established by statute
- ACC is a crown entity which must balance both public policy and commercial objectives. It must:
  - Work with other government agencies to achieve better outcomes for NZers
  - Operate as a good financial manager
  - Be a good employer
  - Implement its legislation in a manner consistent with its purpose and intent.
- The Government appoints the Board
- ACC has a Board which as a matter of practice has representation from the social partners
- ACC is accountable: it regularly reports to the Minister and to Parliament.
- The Board has a service agreement with the Minister

Community Responsibility

- Levies are compulsory on employers and the self employed.
- Government annually sets the levies after consultation.
- These levies pay for work injuries

Background

- New Zealand has just over four million people.
- In 2005/6 ACC spent $251.5m on treatment, rehabilitation, and earnings compensation for lost earnings in the work account.
- In 2005/6 there were 212,693 new claims.
- 22,709 work claims resulted in time off work.
- In 2005/6 ACC had a net levy income in the work injury account of $626.3m.

Levy setting

- A work account funds the claims for work injuries of both workers and the self employed.
- Levies are set for risk groups within the work account.
- Employers can join a partnership programme where they are accredited as agents for ACC and in return there is a discount on their levy for partial risk sharing.

Levy setting

- Levies are paid on every $100 of payroll.
- There are 553 risk-rated levy classes.
- 2007/8 average rate over all levy classes is $0.89c per $100 of payroll.
- Coal mining levy is $2.34 per $100 payroll.
- This fully funds the present and future cost of all claims that have occurred in this levy year.
Claim rates

- 40% of work-related injuries occurred in the agriculture, forestry and fishing, manufacturing, and construction sectors, which together employ 30% of all workers.
- Mining has approximately 5400 workers and has the highest injury rate, though the numbers are small.

Claim rates

- 137 claims per 1000 full-time equivalent employees (FTEs)
- Highest claim rate is mining
- Mining represents 237 claims per 1000 FTEs
- Hunting and fishing: 228 claims
- Agriculture: 184
- Manufacturing and construction: 172
- Finance and insurance: 26

Mining claims in New Zealand

- 2005/6
- 247 new claims: $1,536,099
- 250 ongoing claims: $3,847,728
- 60 new hearing loss claims: $338,688
- 83 ongoing hearing loss claims: $161,473
- 15 new fractures: $107,514
- 15 ongoing fractures: $625,828
- 4 ongoing gradual onset claims: $71,188
- 111 soft tissue new claims: $717,710
- 67 ongoing soft tissue claims: $525,801

The ACC scheme

- Injury prevention
- Rehabilitation
- Compensation

Injury prevention

- Funding of training of health and safety representatives to the NZCTU costs ACC about $1.3 million a year
- ACC pays for New Zealand Council of Trade Unions-appointed trainers, course materials developed by NZCTU, venue hire, and administration of training
- NZCTU delivers the training to health and safety representatives; employers pay the health and safety representatives’ wages while they attend two days’ training a year

Health and safety representative training

- A key part of ACC’s injury prevention for workers
- Through the training, health and safety representatives gain knowledge, skills, and experience to assist them make workplaces healthier and safer
- Health and safety representatives have a status in law - the Health and Safety in Employment Act
Health and safety representatives

- Can issue hazard notices
- Can require an employer to respond to a recommendation
- Assist in hazard identification and control
- Can assist in incident investigation
- Can assist the injured worker return safely to work
- Can work with the inspectorate

Health and Safety representative training

- Three stages
  - Stage 1 – knowledge of rights and duties and role of representative
  - The right to refuse unsafe work
  - Hazard identification and control
  - Issuing hazard notices
  - Working in good faith
  - Stage 2 – incident investigation
  - Role of representative in making a recommendation
  - Stage 3 – a deeper understanding of the role of representative in relation to rehabilitation and return to work of injured workers

Complete rehabilitation - treatment

- Medical treatment paid for: hospital care including emergency dept, outpatient care and surgery, GP visits, physiotherapy, radiology, prescriptions, hearing aids, counselling, pain management
- There are a range of treatment options available that can be requested by treating practitioners
- Education of treatment providers undertaken by ACC, for example, advice about treatment options available
- ACC assists the claimant by identifying providers for services, for example, pain management
- ACC provides resources and training to occupational physicians

Rehabilitation - vocational

- Can assist employers with aids and appliances to assist injured workers back to work
- Can do workplace assessments to ensure safe return to work
- Can pay for work trials in alternate jobs
- Can provided very limited training assistance
- Assists employers to develop return to work plans

Rehabilitation - social

- Assistance to the injured worker at home, in order to become independent, for example, aids and appliances, home help and attendant care
- Can assist with modifications to home and car
- Payment of transport to treatment

Real compensation

- Weekly compensation (WC) at 80% of pre-injury earnings
- WC paid whilst incapacitated from pre-injury employment; or
- Until vocationally independent – that is, can undertake work for 35 hours or more a week for which the claimant has experience, education, and training
Other forms of compensation

- Lump sums for permanent impairment
- Fatal injury compensation – lump sums for dependents and funeral costs

Challenges

- Occupational disease under-compensated
- Proportion of claims declined for occupational disease claims runs at 43%
- Proportion of gradual onset claims declined runs at 53%
- Pain alone not covered at all
- Mental injury not covered - if not secondary to physical injury- or certain crimes

Challenges

- Low level of understanding about ACC
- Low access of ACC by Maori, Pacific Island, and Asian people
- Ageing of the claimant population
- Expectations are increasing due to medical advances – could lead to higher costs
- Poor safety 20-30 years ago impacts now e.g. hearing loss

Conclusion

The ACC scheme is supported by New Zealand’s trade union movement and its Law Society because it:
- is generally administratively efficient
- is accountable to the public through Parliament
- imposes reasonable levies on employers
- pays workers 80% of their pre-injury earnings for as long as they are incapacitated
- generally ensures that injured workers get the treatment they need
- has the capacity to run nationwide injury prevention programmes
- supports the training of health and safety representatives in the workplace.
Safety management and culture

Dr David Creedy

Benefits of safer working
- Fewer lost working days
- Better motivated workforce
- Improved image in public and customers
- Increased profit

Safety management failures in mines
- Australia: Moura No2, 1994, 11 deaths
- Canada: Westray, 1992, 20 deaths
- Ukraine: Sudohol, 1992, 63 deaths
- USA: Sago, 2006, 12 deaths
- China: Fuxin, 2005, 214 deaths
- China: 2006, 4,746 deaths

Accidents in developing countries
- Obsolete equipment
- Lack management skills
- No safety culture
- Poor rewards
- Investment needed

Workplace safety
- Effective safety management system
- Safety culture throughout company

Also need
- Co-operation of workforce
- Total management commitment
- Technology to do the job
- Technology to aid safety

Safety Management System
- Policy
- Organization
- Planning
- Monitoring
- Audit and review
Policy
- Aim?
- What needs to be achieved?
- Strategy

Organisation
- Who is responsible?
- Who does what?

Planning
- Risks
- Control measures
- Safety technologies
- Technical support
- Procedures

Monitoring
- Workplace parameters
- Safety system

Audit and Review
- Are procedures working?
- Improve these

Attitudes
- Macho image
- Social and living conditions
- Poor prospects for improvement
- Low value of life
- Poor education
- Inadequate training
- Peer and parental pressures

Job pressures
- Mechanisation
- New equipment
- New responsibilities
- Fewer staff
- More responsibility
- Cost reduction
- Poor working conditions (mining)

Raise awareness
- Incentives and rewards
- Safety suggestions
- Competitions
- Training
Training

- Safety management system
- Risk assessment
- Workplace environment
- Self-help
- Use of safety equipment
- First aid techniques
- Case studies

Accelerating change

- Develop training schemes
- Look overseas then adapt
- Concentrate on training the trainers
- Publicity material
- Educate the young

Conclusions

- Safety management requires safety culture
- Safety culture must be adopted by ALL
- Need to raise safety awareness in China

How to achieve safe working?

- Suitable technology to do job
- Legal compliance
- Inspection
- Enforcement
- Topping
- Responsibility (safety culture)
Appendix 13 - PowerPoint 6

New Zealand's Health and Safety System and the Role of the Health and Safety Representative

Legislation

- Health and Safety in Employment Act
- HSE Regulations
- Mining Administration Regulations
- Mining Underground Regulations
- Asbestos Regulations
- Pressure Equipment and Cranes Regs
- Petrol Exploration and Pipelines Regs

Codes of Practice

- Minister of Labour approves statement of preferred work practice
- Describes how an employer will take all practicable steps to ensure safety
- Developed with input from those affected—unions and employers

Guidelines

- Developed by industry
- Sets standards for industry about how to:
  - Identify hazards
  - Control hazards
  - Best practice
  - Monitoring

HSE Act

- Covers all employers and employees
- Part time, casual, temporary, fulltime workers
- All types of workplaces
- In China are all workers covered by Health and Safety Laws? Are there gaps, if so please identify the gaps?

HSE Act

- The object of the Act is the prevention of harm to employees at work
- And to protect other persons in the vicinity of work

- Employers must have excellent systems for the management of health and safety
In China – does the law require all these systems to be in place?

In this workplace are all the systems in place?

**Hazard Identification**

- Physical hazards: noise, dust, vibration, temperature
- Chemical hazards: cleaning agents, solvents, paint fumes, diesel exhaust fumes
- Biological hazards: infectious diseases, bacteria, body fluids
- Work design hazards: ergonomic hazards
  - Stress hazards: working hours, working alone, protective clothing
  - Work load, shift work, long working hours
- Stress hazards:
  - Noise, dust, vibration, temperature
  - Cleaning agents, solvents, paint fumes, diesel exhaust fumes
  - Infectious diseases, bacteria, body fluids
  - Working hours, working alone, protective clothing
  - Work load, shift work, long working hours

**HAZARD MANAGEMENT**

- All significant hazards must be controlled
- At this workplace does the employer control hazards through a process of elimination? If so, please give an example of eliminating a hazard.
- Give an example of isolating a hazard.
- Give an example of minimising a hazard.

**Hazard Information**

- Emergency procedures
- Hazards identified
- Where safety equipment and clothing is kept
- Health and safety systems

**Monitoring**

- Where there are significant hazards control them
- Employers must monitor the effectiveness of the controls
- E.g., noise – hearing tests and noise levels
- Lighting – light levels
- Fatigue – survey hours of work, health tests
- Chemical exposure – lung function tests and workplace exposures
Monitoring

- Give five examples of monitoring of employees and the workplace
- What types of monitoring
- Who gets the results of monitoring

Emergency Procedures

- Employers must plan - along with their health and safety representatives - for emergency procedures

Worker Participation

Why have health and safety representatives?

- To give workers and independent voice in health and safety on the job
- To improve health and safety
- To develop expertise amongst workers about their rights

Health and Safety Representatives

- Unions play an important role in supporting health and safety representatives

Health and Safety Representative

- The health and safety rep needs to be able to have access to workers
  - one to one,
  - in meetings,
  - without the employer being there,
  - during work time,
  - whilst on pay.

Health and Safety Representative

- The health and safety rep can tell employers what the hazards are
- How to manage the hazards
- And advise employees on their right to refuse unsafe work

Hazard Notices

- The health and safety rep can make a recommendation to the employer to make an improvement
- The employer must reply or implement the recommendation
- The hazard notice is a legal warning made to the employer by the trained h and s rep
- The hazard notice can be sent to the Department of Labour
Health and Safety Representatives

- Health and safety reps promote the interests of employees who have been harmed at work including assisting them to rehabilitate and return to work.

- The health and safety rep must not be discriminated against, or dismissed because they are carrying out their role.

Questions

- How can health and safety representatives assist you to improve safety at work?
- Who should provide the training of the health and safety representatives?
- Who should decide what training is needed?
- How much training is needed each year?
- How could health and safety reps assist injured workers?

NZCTU Training

- NZCTU has 300,000 members in NZ and is the largest voluntary organisation in NZ.
- NZCTU receives $1.3m per annum to train health and safety representatives from ACC.
- The NZCTU trains union and non-union workers.
- The NZCTU is the main trainer for health and safety representatives in NZ.

Training of Health and Safety Representatives

- Two days a year.
- Three stages of training.
- Held in their locality.
- Workers from different employers are grouped together.

China

- What are the main points that you have learnt from this presentation?

Thank you
ILO Code of practice on safety and health in underground coalmines

Norman Jennings
Chairman
NSW Mine Safety Advisory Council

Introduction

• International Labour Organization
  – UN specialised agency
  – Seeks the promotion of social justice and internationally recognized human and labour rights
  – Unique tripartite structure

• “Decent work is safe work”

International Labour Standards

• International Labour Standards are expressions of international tripartite agreement on a particular matter
  – Conventions
  – Recommendations
  – Resolutions
  – Codes of practice
  – Guidelines
  – Manuals

International Labour Standards

• Conventions
  – International treaties, subject to ratification by ILO member States
  – Create binding obligations under international law
  – Might require member States to amend their national legislation

• Recommendations
  – Set out guidelines which can orient national policy and action
  – Often complement Conventions
  – Not legally binding

Mining Conventions

• Safety and Health in Mines Convention, 1995 (No.176)
  – and accompanying Recommendation No.183
  – 21 Ratifications

• Other Mining Conventions:
  – Medical examination of Young Persons (Underground Work) Convention, 1965 (No.124)
  – Minimum Age (Underground Work) Convention, 1965 (No.123)

Codes of practice

• Codes of practice are not intended to replace national laws or regulations or accepted standards

• Codes of practice
  – provide practical guidance to all those who may be engaged, through social dialogue, in the framing of provisions of this kind or in elaborating programmes of prevention and protection at the national or enterprise levels;
  – are addressed, in particular, to governmental and public authorities, employers and workers and their organizations;
  – contain general principles and specific guidance; and
  – provide a basis for prevention and protective measures based on proven good practice;
  – are considered as ILO technical standards in occupational safety and health
Codes of practice
Examples are
- Safety and health in opencast mines, 1991
- Ambient factors in the workplace, 2001
- HIV/AIDS and the world of work, 2001
- Security in ports, 2004
- Safety and health in the iron and steel industry, 2005

Code of practice on safety and health in underground coalmines
- Meeting of experts on safety and health in underground coalmines
  - Geneva, 8-13 May 2006
  - 23 Government, Employer and Worker experts

Mandate of meeting
- At its 292nd Session in March 2005, the Governing Body of the ILO decided that a meeting of experts should be convened to
  - "revise the existing code of practice on safety and health in coalmines,
  - and develop and agree a programme of follow-up action for the remainder of the biennium to promote the use of the new code and provide training in its use in countries seeking assistance to improve coalmine safety"

Basis for draft code
- Code of practice on safety and health in coal mines, 1986
- Code of practice on safety and health in the iron and steel industry, 2005
- A thorough review of current good OSH practice in several countries

Reasons for revision
- Changes in the industry
- Technological changes
- Societal changes
- Changes in occupational safety and health policies and practices

The Code and C.176
- The Code of practice provides important practical guidance in support of the provisions of the Safety and Health in Mines Convention (No.176) and its accompanying Recommendation (No.183).
After adoption of Code

• Text posted on Internet

• Approved for publication by ILO Governing Body (November 2006)

• To be published in pocket format in English, French, Spanish, Chinese …
NZ Mines Rescue Service
A Brief History and Current Role

NZ MINES RESCUE SERVICE

- Main objective - save lives
- Then - a reactive response
- Now - reduce the risk
- Now - prepare for emergencies
- Now - ensure miners can respond to emergencies

NZ early incidents were disastrous events:-
- 1879 Kaitangata – 34 dead from gas explosion
- 1896 Brunner – 65 dead from gas and coal dust explosion
- 1907 Nightcaps – 3 dead from CO & CO₂ inhalation produced from a fire
- 1914 Huntly – 43 dead from gas and coal dust explosion
- In between numerous unreported deaths in one’s and two’s

Dobson Mine – 3rd December 1926
- Gas and coal dust explosion underground
- Rescue teams - no breathing apparatus
- Nine men died
- Commission of enquiry decided - “...an organisation trained & equipped to deal with any situation be available in the coalfields of NZ”

Mines Rescue stations not built:-
- 1929 Linton – 3 dead from gas & coal dust explosion
  - Outcome - a rescue station in the Grey Valley
- 1939 Glen Afton – 11 dead from CO poisoning
  - Outcome – rescue stations in Buller, Ohai & Huntly
  - Unfortunately this did not mean the end of disasters

Strongman Mine Disaster - 19th January 1967
- Explosion occurred at 10.00am
- Fireball only stopped by wet area of roadway
- Rescue teams - worked for 14 hours recovering bodies
- 19 men died, 2 bodies remain in the mine still
- 5 rescue team members were awarded the British Empire Medal

Old proto sets were used at this mine in an emergency for the last time
Sometimes miners are rescued…………..

- East Mine 1990
- CM buried with miner still in the cab
- CM operator trapped for 19 hours

Since then:

- West mine explosion 1992 – *Our Case Study*
- Mt Davy mine 1997 – Rock fall; 1 dead
- Mt Davy mine 1998 – Gas outburst; 2 dead
- Wairaki mine 2001 - Roof fall; 1 Dead
- Black Reef mine 2006 – Flooding; 1 Dead
- Roa mine 2006 – Roof fall; 1 Dead

**Mines Rescue Now**

Training programmes:

- High level fitness and skill
- New equipment and stations-
- Wide range - training with equipment & situations
- Work behind mine seals involving-
  - recovery of gear
  - checking conditions of pillars, roadways & water levels
  - monitoring atmosphere

New fitness and medical standards

**Attitude and personal discipline:**

- Training - irrespirable atmospheres
- High heat & humidity
- Work to limits of gear – trust in equipment
- Work as a team - trust in each other

**Mines Rescue - Now**

Coal mine service-

- Unit standards based training
- Advanced equipment
- Emergency 1st response training & call-outs
- 1st aid & advanced medical treatment

- Emergency response & fire fighting training
- BA operation training
- Maintenance of emergency equipment
- Call-outs & specialist u/g jobs
- Old workings reconnaissance
- Induction & coal mining related training
- Gas analysis & interpretation
**Mines Rescue Now – Other Services**

- Hard rock mines & tunnels – training, servicing gear, call-outs
- Non mine service (any underground situation) – training, BA equipment, call-outs
- Civil emergency requirements

**Solid Energy Introduced -**

- Underground Monitoring
- Self-Escape – CABA stations and lead-lines
- CABA training
- Mine based 1st response teams

*Mines Rescue - back up and ongoing rescue operations*